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ABSTRACT

Articles representing two views on the issue of rapid population growth and economic development are presented. Although the authors present different perspectives, they agree on many of the fundamentals. For example, both reject alarmism about impending "population explosions" and the use of population as a scapegoat for all Third World ills. Together, their research casts rapid population growth in the role it is now understood to play: not as the sole cause of underdevelopment, but as an accomplice aggravating other existing problems. In the first article, "Population and Development: Back to First Principles," Timothy King of the World Bank counters views expressed by Julian Simon in "The Ultimate Resource" (e.g., Simon's position that the global situation with respect to the supply of raw materials, energy, and food is not as bad as people think). King emphasizes the need to examine population problems country by country since "global trends mask a variety of conditions." In the second article, "The Population Debate: A Status Report and Revisionist Interpretation," Allen C. Kelley of Purdue University calls for an interpretation of the role of population growth in economic development which de-emphasizes some of the traditional hypothesized direct influences of population. Kelley characterizes rapid population growth as a catalyst that brings other problems to a head faster and limits the time in which political solutions must be found. This consensus on the role of rapid population growth is displayed in the authors' analyses of the African food crisis of the 1980s. King sees limited technology and weak incentive to producers as the main culprits, while Kelley attributes famine to inadequate distribution of food and income. (LH)

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The New Population Debate:

Two Views on Population Growth and Economic Development

By Timothy King
and Allen C. Kelley

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The New Population Debate: Two Views on Population Growth and Economic Development is the seventh in a series of occasional papers, *Population Trends and Public Policy*, published by the Population Reference Bureau, Inc. This series is devoted to a discussion of demographic issues of concern to policymakers.

Timothy King, author of the first paper, "Population and Development: Back to First Principles," is a World Bank senior economist. The World Bank, however, bears no responsibility for any of the views expressed.

Allen C. Kelley, author of the second paper, "The Population Debate: A Status Report and Revisionist Interpretation," is James B. Duke Professor of Economics, and Associate Director, Center for Demographic Studies, Duke University. He acknowledges the research assistance of Rakesh K. Bhala and Derek Bandeen.

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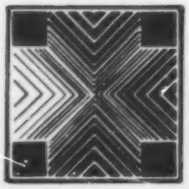


The New Population Debate

Introduction

Once again famine threatens the lives of millions across Africa. Thousands have died, and prospects for others, particularly the children, are bleak. While food production has kept pace with population increases on a global level, in Africa agricultural production has lagged because of mismanagement, drought, civil wars, and soil erosion. Debt-ridden African nations now lack the credit to purchase food on international markets.

Africa's food shortage comes at a time when some policymakers are questioning many of the basic premises of U.S. population assistance. This was reflected in discussion about the U.S. position at the 1984 International Conference on Population in Mexico City. Few would deny that population and resources are currently out of balance in Africa. Yet there is growing sentiment that past reactions to similar crises have exaggerated the role of population growth. Today much more attention is being given to political, economic, and resource management factors.

How does rapid population growth contribute to imbalances between people and the resources available to provide them with an adequate standard of living? Are the adverse effects of population growth on economic development serious enough to warrant supplementing efforts to increase food production and distribution capacity with population assistance? These questions are the focus of the renewed population debate. The following articles represent two views on the issue of rapid population growth and economic development. The authors, Timothy King of the World Bank and Allen Kelley of Duke University, present different perspectives—but agree on many of the fundamentals. Together their papers provide fresh insight into this important policy question.

Both reject alarmism about impending "population explosions" and the use of population as a scapegoat for all Third World ills. King emphasizes the need to examine and address population problems country by country, as "global trends mask a variety of conditions." He counters proclamations that all growth is good by showing the shortages of arable land that result if rapid population growth is sustained in poor countries dependent on agriculture for their economic well being.

Kelley characterizes rapid population growth as a catalyst that brings other problems to a head faster and limits the time in which political solutions must be found. He suggests that the impact of rapid population growth is tempered when its positive indirect effects are considered.

If Kelley and King were asked to assess the causes of today's African food crisis, their answers would be similar. The growing human and lifestock populations hastened the spread of deserts in Africa that helped lower production, says King, but the main culprits are limited technology and weak incentives to producers. Kelley would agree with King's assessment, he notes that pricing policies in many African countries twist the terms of trade against farmers. Famine, says Kelley, results from inadequate distribution of food and income. Population growth is not the villain in food shortages, according to Kelley, but an accomplice.

Taken together, the articles cast population in the role it is now understood to play; not as the sole cause of underdevelopment, but an accomplice aggravating other existing problems.

Population and Development: Back to First Principles

by Timothy King

Refugee relief, Somalia

On a global scale, population growth rates are lower in the mid-1980s than they were in the mid-1960s. And the debate about adverse effects of population growth on economic development has been reopened: some argue that past concern was exaggerated, while others stress that population and development issues remain as serious as ever. In my view, the demographic future for many countries, and its implications for improvements in living standards, is still far from clear.

The basis for this thinking is that global trends mask a variety of conditions and problems. One of the main themes of this paper is that the population "problem" of developing countries really represents a *number* of problems. To fully understand the potential significance of population growth, it needs to be examined country by country, even region by region within countries.

A "standing room only" population explosion was never likely to occur. Take the case of Mexico: if its 3.4 rate of population increase of the early 1970s had continued for half a century, Mexico's population would have multiplied 14 times. No serious demographer or economist believed that such a scenario was even remotely possible. It is inconceivable that within 50 years Mexico could have managed to provide a tolerable standard of living for such a large number of people, or that the United States would have been prepared to accept tens of millions of Mexican immigrants.

Fortunately, Mexico's fertility rate has fallen rapidly since the mid-1970s, the result of a strong family planning campaign coupled with increases in life expectancy and other social and economic changes. Even so, Mexico's population is expected to double before it eventually stabilizes. While doubling is not 14-fold multiplication, for Mexico it is still a major challenge.

Fertility rates are not expected to fall as fast in Africa. Death rates are still high. There is little sign of conscious birth limitation or a desire for smaller families. In some parts of the continent, poor health prevents many women from having the number of children they desire, so a rise in fertility seems a likely consequence of future development.[1]

For Africa there is another possibility that cannot be rejected out of hand. In most African countries south of the Sahara, agricultural production did not keep pace with population growth during the 1970s; in a few, it actually fell. Blaming this poor performance on growing population pressure would be wrong; limited technology and weak incentives to producers are probably the major culprits. But the spread of deserts, the result of added pressure from the growing human and livestock populations, may have helped to lower production in some African countries.[2]

Agriculture is Africa's main source of both export crops and local food supplies; the possibilities of relying on food imports to compensate for poor agricultural performance are limited. Therefore the Malthusian specter of population growth slowed by rising death rates rather than falling birth rates has not yet been exorcised.

Even for developed countries, the future is not at all certain. The drop in fertility to below replacement levels in most industrialized countries in the 1930s, and its return to these levels four decades later after rising substantially in between, has not given much indication of what determines long-run population trends once countries reach a high level of development. Therefore, it is unclear whether the population

Marketplace, Mexico

of developed countries will grow or decline in the future.

My paper's purpose is not to speculate about the combined effect of these contrasting trends or about the mechanisms that must come into play if humans are not eventually to be standing on each other's shoulders or to die out altogether. I want merely to make the point that the economic and political significance of demographic change is not simply or even mainly a question of global numbers, but will be largely determined by *where* future population growth occurs.

These remarks and examples, I hope, strike the reader as commonplace. For many years development specialists and policymakers around the world have recognized the significance and seriousness of demographic change. During the early 1970s, those concerned with population growth disagreed over whether family planning services are enough to reduce fertility or whether these efforts are useless until economic development has been achieved. Since then, however, a consensus has emerged in response to evidence indicating that both family planning and socio-economic conditions are important in determining birthrates.[3] The complementary roles of economic development and family planning have been widely affirmed.

The Challenge to the Consensus

It is therefore surprising that within the United States the family planning vs. economic development debate has returned to the arena of public controversy. Direct challenges to the consensus have won the attention of the Reagan Administration.

In 1981 the U.S. Office of Management and Budget unsuccessfully attempted to reduce and then eliminate the U.S. Agency for International Development's family planning budget. Before the U.N.'s August 1984 International Conference on Population held in Mexico City, controversy erupted within the Administration over formulating a U.S. policy position. Reversing policy held by previous administrations, U.S. delegates questioned the need for family planning assistance and argued that the effort to slow population growth should focus on economic reforms to create free-market economies in the Third World.

The challenge to the earlier consensus is based on the view that the effects of rapid population growth have been exaggerated and government policy should not target individual decisions about fertility except to provide education and possibly contraceptive supplies. These views were most prominently expressed in a 1981 book by Julian Simon, *The Ultimate Resource*.[4]

Simon's theme is that the global situation with respect to the supply of raw materials, energy and food is not as bad as many people think. Potential reserves are very large, but not fully known because they are found only as needed. The potential for recycling is also enormous. Taken together these imply infinite resources.

Food supplies are not significantly constrained by land shortages and the situation is not getting worse, says Simon. The prices of energy and raw materials have fallen in the long run. Short-run trends may be misleading. And because population growth leads to faster economic progress in the long run, it also

eventually may lead to more and cheaper food per person and relatively cheaper energy supplies. "The ultimate resource," he says, "is people—skilled, spirited and hopeful people—who will exert their wills and imaginations for their own benefit and so, inevitably, for the benefit of all of us."

The Arguments Under Attack

Before discussing this view further, it will be useful to summarize briefly the conventional views about the impact of rapid population growth that are under attack. This is necessary because critics are usually selective in the elements of the case they choose to attack.

The first are the traditional Malthusian concerns. Sooner or later, a combination of population growth and growth in income per person puts pressure on a fixed supply of natural resources whose prices rise. Except for the owners of these resources or close substitutes, most people will be worse off. If the resource is vital and if substitution possibilities are limited or unfeasible, then there will be serious economic problems, especially for the poorest people.

An obvious candidate for depletion is arable land. Although rich and poor people consume different foods, the demand for food is largely a consequence of population size. Since food is essential to human existence, the supply of resources needed to produce food (land, water and energy) may ultimately constrain the size of the human population.

Malthusian concerns are often extended beyond a concern for food supply, to an anxiety about energy and mineral supplies, rising environmental pollution, and so on. At their most extreme, Malthusians raise the problem of "increasing entropy"—the fact that use of energy involves its conversion into forms that make it unavailable for future use.[5] (This is the second law of thermodynamics.) This may be a serious problem in a closed system such as the universe, but not in the earth's biosphere, daily supplied by energy from the sun.[6] The general problem with any extension of Malthusian arguments beyond food supplies is that most of the concerns reflect the consequences of rising income and production per person, at least as much as an increase in the number of people.

Very often the best solution is *not* to live more simply and to do without the products of a polluting industry, but to insist that such industries install equipment to reduce their pollution. This raises both costs and prices and is most easily afforded by rich countries. Similarly, the recycling of minerals will be more easily achieved by a wealthy world than a poor one. For the purpose of discussing population growth, therefore, Malthusian issues are best applied to the traditional question of food supplies.

There are many developing countries, including most of Latin America, that are much richer in agricultural resources than Japan or Western Europe. Malthusian concerns seem much less relevant here. A second Malthusian concern is that population growth retards the growth of income per person. This argument has two strands. The first notes that a more rapidly growing population has a greater percentage of children, and therefore workers must support a larger number of dependents. This might lead to lower savings, and hence lower investment and slower growth in total income. In the litany of antinatalist arguments, however, this one bears little weight. The determinants of savings and investment are complex and not well understood, but most modern theories suggest that the proportion of children in the population is not very important.

The argument's second strand is much more significant. It argues that whatever investment does take place—whether in schools, farms or factories—must be spread over more workers and so slows the growth of capital per person. Lower per person capital may manifest itself in the use of labor-intensive production requiring many workers and producing less per employed worker. Alternatively, it may be reflected in high levels of unemployment and underemployment in some areas of the economy and the use of capital-intensive technology in other areas. Since a more rapidly growing population creates a faster growing labor force, the gross national product (GNP) might grow faster than with slower population growth; but GNP per worker and per person will grow more slowly.

A third concern is with the adverse effects of population growth on the distribution of income and poverty levels. Independent of growth in average incomes, population growth means an increase in the labor force relative to the supply of land and capital: this means relatively lower wages and higher rents and profits. Since property owners have more opportunities than wage earners, as a class they will be wealthier (even if they also earn wages). Therefore population growth means a less equal distribution of income. In the world's poorest countries, poverty is thus more slowly eliminated.

Other worries focus not on the economy as a whole but on individual households. Larger families can offer less parental attention per child, in addition to limited economic resources and housing.[7]

Stated in this brief and general way, as they have been in the past, these arguments represent only

Urban slum, El Salvador

general trends. Population problems vary from country to country, and they are not always conspicuous. To say that labor force growth aggravates problems in creating jobs or raising productivity does not mean that this growth inevitably causes unemployment or that it prevents all growth in productivity. Nor, of course, does it mean that all unemployment can be blamed on population growth. Similarly, to say that population growth contributes to problems of poverty and undernutrition does not mean that it is the sole cause of world hunger.

The New Debate

The Ultimate Resource is a polemic; instead of seeking out the strongest opposing case, Simon attacks the easy targets, such as *Limits to Growth*, the arguments of the more extreme Malthusians, such as Paul Erhlich, and of the biologists who have drawn analogies between the reproductive behavior of insects and rodents in confined spaces and humankind on an overcrowded planet.[8] There have been weak arguments and much exaggeration, so there are many tempting targets. But to anyone grappling with the real problem of rapid population growth in developing countries, much of Simon's book, far from sparking productive debate, appears to be setting fire to a row of straw men.

Leaving aside polemics, however, the strands of Simon's argument with respect to population are as follows:

1. The best guide to the future is the past. Prices of food, energy and raw materials, which are the best measures of scarcity, have tended to fall historically. Past predictions of population growth have often been inaccurate. Therefore, there is not much to worry about.

2. Furthermore, there has been little historical correlation between population growth and growth of per capita income. Although providing jobs and government services for a growing population requires resources, children in developing countries do useful work at an early age. Parents with large families are likely to work harder and save more. Per taxpayer, it is cheaper for a country with a larger population than a smaller one to install a seaport or build a railway system, so a larger population leads to faster technological progress.

3. Parents in poor countries have economic reasons for wanting large families; these diminish with the process of development and birth rates tend to fall. Although large families do impose social costs on people other than the parents, in the long run these costs are offset by the gains from population growth. Since this is true for income per person, it is also true for human welfare; other things being

Table 1:
Projected Population Densities, Selected Countries

Countries	Population (in millions)			People per square kilometer of land			People per square kilometer of cropland*			Labor force active in agriculture
	1980	2010	Ultimate	1980	2010	Ultimate	1980	2010	Ultimate	(%) 1980
Egypt	42.3	72.9	114	43	73	114	1489	2569	4017	50
Kenya	16.2	57.1	153	29	100	269	712	2516	6740	78
Rwanda	5.2	15.1	47	208	606	1884	541	1576	4896	91
El Salvador	4.8	9.8	17	234	473	819	713	1443	2497	50
Jamaica	2.2	3.2	4	202	299	367	826	1225	1499	35
Bangladesh	88.5	200.3	454	661	1496	3391	969	2194	4975	74
China	980.3	1312.2	1461	105	141	1574	984	1317	14714	69
India	687.3	1128.4	1707	231	379	574	407	670	1013	71
Indonesia	146.3	241.8	370	81	134	204	894	1477	2261	58
Republic of Korea	38.1	55.5	70	388	565	713	1713	2496	3149	34
Sri Lanka	14.7	23.7	32	227	366	494	686	1104	1491	54
Vietnam	54.2	104.9	171	166	323	525	925	1791	2920	71
Netherlands	14.1	15.6	15	413	457	441	1649	1819	1750	6
Japan	116.8	131.8	128	315	418	345	2365	3139	2591	12

*Cropland comprises all arable land: land generally under temporary crops, land used for temporary meadows, for market or kitchen gardens or for cultivation under grass, land temporarily fallow, as well as land under permanent crops.

Source: Population and labor force: World Bank
Land: U.N. Food and Agriculture Organization

equal, the more people there are, the larger the sum total of human happiness.

What are we to make of these arguments?

Simon's views on resource scarcities and substitution possibilities are not very different from those of the majority of economists. This does not guarantee their accuracy. History can be a bad guide to the future. Developed countries overcame their periods of relatively rapid population growth apparently without jeopardizing their economic progress or running into Malthusian constraints. But this might be misleading.

Population growth in Europe and areas of European settlement was almost universally lower, even at its peak, than it has been in almost any developing country since 1950. Except in the countries of new settlement, rates of population growth remained below 2 percent per year, usually well below that.[9] Fertility was lower than contemporary fertility in most developing countries, even before it began to decline. Birth rates were seldom as high as 40 per 1,000, death rates were generally higher than in today's developing countries.

Demographic pressures in Europe were also eased by international migration. Although even at its peak (1881-1910), net emigration averaged only 14.4 percent of the growth in population, it was much more significant in relieving points of particular population pressure.[10] Ireland is the most striking case. During the decade 1851-61 annual (gross) emigration averaged 1.9 percent of its (decennial) mean population and averaged about 1.3 percent for the remainder of the century. In the 1880s, more than 7 percent of the Scandinavian population emigrated to the United States; more than 6 percent of Italy's population emigrated to the U.S. between 1905 and 1914.[11]

In contrast, there are very few countries classified as developing whose population growth rates have been as low as 2 percent during the past 20 years. Birth rates well above 40 per 1,000 are common. Emigration possibilities are limited. So the countries where population growth is pressing most strongly experience different conditions from those faced in the past.

Both Malthusians and anti-Malthusians can be faulted for focusing on population-resource issues on a *global* rather than a country by country basis. At present population density varies widely. Certain nation states will not support the citizens of other nations indefinitely. The right to exclude immigrants is virtually unchallenged. With a few exceptions, the

Tea picking, Kenya

population of most countries will be the descendants of their present population. Their relative size will not be significantly affected even by temporary international migration. Projecting national populations independently indicates where the main pressures of rapid population growth are likely to occur.

Table 1 is based on World Bank *World Development Report 1984* population projections for some of the most densely populated developing countries. Oil exporters, except for Indonesia, and city states, such as Singapore and Hong Kong, are excluded. The Netherlands and Japan, as the most densely populated industrial countries, are included for comparison. Although its inclusion in the table is not strictly justified by its 1980 density, Kenya is included to show how rapid population growth combined with a low proportion of arable land may produce a disturbingly high population density.

In making these projections, the year in which a country's declining fertility would reach replacement level was derived based on recent fertility rates, birth rate changes, and family planning performance and policy. Upon achieving this level, fertility was held constant at replacement level until eventually the population became stationary. For Japan and the Netherlands, fertility was assumed to *rise* to replacement by 2005.

Simon argues that the amount of arable land has risen in most parts of the world through clearing, reclamation and so on. Yet the average increase in arable land has been less than 1 percent per year. These increases in arable land are probably smaller in the areas already subject to the greatest population pressure, and this new land is likely to have lower agricultural potential. Even if this were not the case, and even if past growth rates of land availability continued, the picture presented in Table 1 would not be fundamentally changed.

Density does not reflect all the dimensions of the problem. However, its usefulness as a measure increases as populations in specific areas increase in size. In the distant past when movement was unconstrained by national boundaries, the density of settlement was probably greatly influenced by the fertility of the land. More fertile areas attracted newcomers and relieved Malthusian pressures elsewhere. With the emergence of nation states, movement created greater conflict, even wars when it threatened the territorial sovereignty of a neighbor. Today, such movement involves much greater risks and costs, and is often more restricted.

Several of the countries included in this table face future population densities greater than modern Japan—sometimes strikingly greater, as with Bangladesh and Egypt. At present, Bangladesh, unlike Egypt, has very low crop yields. Raising Bangladesh's crop yields to world standards could bring a great deal of economic growth. Yet it seems inconceivable that either of these countries (or most of those on the list) can raise their economies to

Fish farm, Bangladesh

developed country levels without a major change in their patterns of economic activity.

As development proceeds, all developing countries can expect a shift in the occupational structure of their labor force that will markedly reduce the share of the population engaged in agriculture. This structural shift is greatly impeded by the high costs of industrial development, but it can be expected irrespective of the pattern of a country's international trade. Even New Zealand now has only 10 percent of its economically active population working in agriculture. In densely populated developing countries, the transition probably will have to come earlier and faster, since the need to finance growing food imports is likely to be serious. As Table 1 shows, a high, and sometimes overwhelming, proportion of the labor force of these countries is still engaged in agriculture, so that the magnitude of the structural shift required is enormous.

This table should not be interpreted as implying that Bangladesh necessarily faces a Malthusian crisis. Nevertheless, it highlights the fact that in parts of South Asia and Africa such a crisis canot be ruled out. Complacency based on the history of developed countries is thus little short of amazing.

Simon makes the point that natural resource prices tend to fall in the long run. But to think that the price of a resource is always the best indication of scarcity is misleading. For example, economist Amartya Sen has recently brought together evidence that modern famines are not as much a consequence of a physical shortage of food in the affected areas as of a drop in the purchasing power in the affected population.[12] One can imagine a situation where drought drastically reduces the crops of subsistence farmers leading to widespread starvation, while the prices of marketed crops grown under irrigation remain relatively unaffected. Food is not scarce, but the poorest people lack money to purchase it. Similarly, a grain shortfall in the Soviet Union will have much more impact on world prices than a comparable one in Bangladesh, since the former can afford to maintain its consumption through imports and the latter cannot.

While Simon bases his own optimism on extrapolations of history, he is skeptical of the ability of demographers to do the same, and points out that the size of populations has fallen as well as risen. Trends in low-fertility populations have proven difficult to predict; small changes imply very different outcomes in the long run. Also, demographers in the 1940s did not anticipate the rapidity of the fall in postwar death rates in the developing world. But demographers have not significantly changed their views on the prospects for developing countries

during the past quarter century.[13] Also, there has been considerable improvement in data, and forecasts for individual countries frequently reflect this improvement.

When discussing the relationship between population growth and economic growth, it is important to recognize the context in which the issue is posed. There *are* positive aspects in the modest population growth of about .5 to 1 percent experienced by many developed countries since the World War II; but there are still costs. It is easier to take advantage of new opportunities for production and to change the patterns of labor skills if the labor force is growing, rather than stationary. Supporting the retired population is also less of a burden. Even though a growing population requires new housing, schools and so on, these are not as great a burden in a growing economy. Three percent growth in a *poor struggling* economy—indeed in any economy—is a very different proposition. Simon has remarkably little to say about this.

Simon's arguments center on the savings gained by sharing the costs of modernization among a larger population. These savings certainly exist. It is obvious that, other things being equal, it takes more investment per person to build roads and ports in a more sparsely populated country. The problem is that these are savings based on population *size*, not population *growth*. Simon implies that a larger population size leads to a larger GNP. Even if true, there are bound to be considerable costs imposed by the population growth needed to achieve it.

In this line of argument, savings gained by sharing modernization costs among a larger population partly offset Malthusian worries about diminishing returns in natural resource-based sectors, such as farming and mining. Such savings substantiate the belief that the most desirable rate of population growth is not necessarily zero, but might be slightly positive. Yet these savings provide very little comfort in the context of current high population growth rates in most developing countries.

Like many other pronatalist authors, Simon points out that the more human beings there are, the greater the potential of the human race. While this must in some sense be true, it is quite clear that population size has had very little to do with the periods and places in which human genius has flourished in the past. Greece, at the peak of its artistic, literary, scientific and philosophical achievement, between the sixth and fourth centuries B.C., had a total population of 2 to 3 million, and Athens itself only about 200,000.[14] Shakespeare, Donne, Marlowe and Spenser were contemporaries at a time when the population of the English-speaking world was about the same scale (7 million) as that of Mali or Guatemala today. In fairness, Simon appears less concerned with rare genius than with more mundane technological improvements. But even this is much more likely to be a function of the size of economic activity and of educational levels than of the numbers of people inhabiting a given geographic area.

The More, The Better?

To this writer, at least, Simon has had very little success at demolishing the case for limiting population growth—at least with respect to the high rates of population growth common in developing countries—or at establishing a pronatalist case of his own. At this point, however, a libertarian might argue "Whoever said it was the business of society to maximize per capita income anyway?" Parents are rational, they make conscious choices about family size in both rich and poor countries. They receive unmeasured benefits from a sense of security and perhaps (though much more doubtfully)[15] direct economic advantage from having many children; above all, they derive pleasure from their offspring. If, in reply, it was argued that children impose social as well as private costs, the conservative response would be that the state should not subsidize children through free education; at most, student loans and family planning information should be provided.

But the social costs of additional offspring are not simply the public services they consume. A person competes with his or her contemporaries: a larger group entering the labor force lowers wages for all and a larger farming population forces the use of marginal land. In this sense, it is in the interest of members of the next generation for that generation to be smaller.

It might be argued, as Simon does in his chapter entitled "Ultimately—What Are Your Values?," that this would entail a loss of social welfare, arising from the absence of happiness that would have been experienced by those who would have been born if the generation were larger. This is an old controversy, but in my view there is only one sensible answer. Happiness is not something that exists in a disembodied state; it must be attributed to individuals. If an individual does not exist, we cannot talk about his or her loss of happiness.

Why Now?

Why have these arguments received so much public attention at this time? One can only speculate, but to

do so is instructive. The media characterized the Reagan Administration's policy change at the Mexico City population conference as an attempt to shore up New Right voters before the 1984 elections. This assessment may be accurate, but only partially so.

The root of the problem appears to be the tendency of many of those most concerned with the problems of rapid population growth to exaggerate its significance. The oversimplification of complex issues, the attribution of many social ills to one cause, and the forecasts of imminent catastrophe may attract attention and sell books, but inevitably lead to a backlash sooner or later.

In spite of an increasing amount of research and a sophisticated discussion of population issues within the scientific community, in the public mind population growth has become associated with global Malthusian catastrophe rather than with prolonging the miseries of the world's poorest people. A book that allays fears about Malthusian catastrophe and virtually ignores world poverty is appealing to the extent that it appears to dispel the population problem.

Second, the widespread view that government regulation has been tiresome and costly has led to a reaction against trying to solve social problems through public action. Anyone who suggests that involving government in population matters is unnecessary can be assured sympathetic attention.

Back to First Principles

Simon's message is simple and appealing, but harmfully misleading for public policy. Population growth, especially rapid growth in the poorest countries, remains a matter of very deep concern, and continues to require social action. More than two decades of serious debate have led to a consensus on some principles on which to base policy:

1. The "population problem" varies between nations and is not simply a result of global numbers.

2. For many countries, especially in parts of Asia and Africa, food supply remains a serious problem.

3. For these, and many other countries, including Mexico and most of Latin America, the main worry about rapid population growth is that it aggravates problems caused by poverty, such as malnutrition, illiteracy, and underemployment. Demographic growth is not the sole cause of these problems, but it makes them harder to solve.

4. Development programs that reduce poverty contribute to solving demographic problems. They reduce the number of children wanted and encourage parents to devote resources to the health and education of their children.

Nutrition class, India

5. Population programs complement rather than compete with these efforts. Slowing population growth allows time to invest in the quality of the life of individuals who are, as Simon correctly notes, the "ultimate resource."

6. Fertility norms can be changed non-coercively. Helping parents to achieve smaller families by making family planning services freely available and widely known is especially important.

Though these principles are generally accepted, they need to be applied. More research and policy analysis at the country level is needed. How individuals respond to alternative policies is still poorly understood. Designing effective development and demographic policies for individual countries requires a great deal of careful analysis and discussion. The population debate must concentrate on these issues, not on reiterating, or on refuting, global Malthusianism.

Family planning visit, Mauritius

Footnotes

1. Caldwell, John C., "Fertility in Africa," in Nick Eberstadt (ed.) *Fertility Decline in the Less Developed Countries* (New York: Praeger, 1981) pp. 97-118.
2. Brown, Lester R., *Building a Sustainable Society* (New York: Norton, 1981) pp. 22-23.
3. A summary of this consensus can be found in the World Bank, *World Development Report 1980* (New York: Oxford University Press) pp. 64-67, or even more briefly in the *World Development Report 1981*, pp. 107-110.
4. Simon, Julian, *The Ultimate Resource* (Princeton: Princeton University Press, 1981).
5. See Rifkin, Jeremy, *Entropy: A New World View* (New York: Viking Press, 1980).
6. Boulding points out, however, that since the thermodynamic potential of the universe was created once, it might be created again. See Boulding, Kenneth E., *Evolutionary Economics* (Beverly Hills: Sage, 1981) pp. 148-149.
7. Birdsall, Nancy, "Population Growth and Poverty in the Developing World," *Population Bulletin* Vol. 35 No. 5 (Washington: Population Reference Bureau, 1980).
8. Meadows, Donella, *et al.*, *The Limits to Growth* (New York: Potomac Associates, 1972); Erhlich, Paul, *The Population Bomb* (New York: Ballantine, 1968); Calhoun, John B., "Population Density and Social Psychology," *Scientific American* 206 (1962) pp. 32-48.
9. Clark, Colin, *Population Growth and Land Use* (London: Macmillan, 1967).
10. Kuznets, Simon, *Modern Economic Growth: Rate, Structure and Spread* (New Haven and London: Yale University Press, 1966) pp. 52-53.
11. Brinley, Thomas, *Migration and Economic Growth* (Cambridge: Cambridge University Press, 1973) p. 75.
12. Kuznets, *Modern Economic Growth*, p. 55.
13. Sen, Amartya, "Famines," *World Development* Vol. 8 (1980) pp. 613-621.
14. The United Nations' medium variant projection for the world population in the year 2000 was 6.3 billion in the projection made in 1958, 6.5 billion in 1968, and 6.1 billion in that made in 1980. Over that period the projection for less developed countries rose by less than 3 percent (from 4,720 million to 4,850 million); that for more developed countries fell by more than 11 percent (from 1,430 million to 1,270 million).
15. Clark, *Population Growth and Land Use*, pp. 89-90.
16. It is likely that many parents do believe that children are a good investment, quite apart from their other values. The limited research information suggests that children are an economic drain. See Repetto, Robert G., "Direct Economic Costs and Value of Children" and Eva Mueller, "The Economic Value of Children in Peasant Agriculture," both in Ronald G. Ridker (ed.) *Population and Development: The Search for Selective Interventions* (Baltimore: Johns Hopkins, 1976) pp. 77-153. Mead Cain interprets his findings on the work activities of children in Bangladesh as evidence that high fertility may be economically rational, but this greatly depends on the opportunity cost of resources in the years before children begin to cover their own costs (about age 12). See Cain, Mead T., "The Economic Activities of Children in a Village in Bangladesh," *Population and Development Review* Vol. 3 (September 1977).

The Population Debate: A Status Report and Revisionist Interpretation

by Allen C. Kelley

A fresh look at the impact of population growth on the economic development of the Third World is needed, for it is time to recognize that the "traditional" arguments may require modification.

For almost 200 years, scholars and policymakers have been concerned about population and development. Seldom has an issue of scientific inquiry been charged with such emotion. And numerous scholars have adopted antinatalist positions, maintaining that many problems of underdevelopment will be solved largely by slowing population growth through limiting the number of births. Even a value-laden vocabulary is used: "the population problem," the Malthusian "devil" or "crisis," and the "burden of dependency."

This sentiment persists despite a literature that, on balance, would lead to a more cautious position. For example, Malthus' predictions were not verified for the countries he studied; slow population growth was considered a cause of the economic stagnation of the 1930s; and many development scholars and historians concluded that population growth often stimulated rather than deterred the economic progress of presently developed countries. The state of knowledge in 1960 on population and its relationship to economic development was accurately summarized by Nobel Prize laureate Simon Kuznets:

> ...we have not tested, or even approximated, empirical coefficients with which to weigh the various positive and negative aspects of population growth. While we may be able to distinguish advantages and disadvantages, we rarely know the character of the function that relates them to different magnitudes of population growth.[1]

Viewed from a scientific perspective, it is thus surprising that the tide of popular opinion on the role of population growth could place it as *a*, and possibly *the* major obstacle to the economic growth of the Third World. Public statements by leaders of international organizations such as the World Bank and the United Nations and (until recently) U.S. governmental agencies such as the Agency for International Development reflected these sentiments.[2] For example, in a 1973 speech former World Bank president Robert S. McNamara compared population growth with nuclear conflict:

> ...the greatest single obstacle to the economic and social advancement of the majority of peoples in the underdeveloped world is rampant population growth. ...The threat of unmanageable population pressures is much like the threat of nuclear war. ...Both threats can and will have catastrophic consequences unless they are dealt with rapidly and rationally.[3]

In the minds of many, the population debate was "closed" during the 1970s. Rapid rates of population growth strongly retarded economic development in the Third World. Research has focused on the *causes*, in contrast to the *consequences*, of population change. Government programs emphasized family planning.[4] To the surprise of many, the population debate was "re-opened" in the early 1980s culminating in a near-reversal in the U.S. policy position at the U.N.'s International Conference on Population in Mexico City during August, 1984. Timothy King, senior economist at the World Bank, suggests two reasons for the new debate in his paper "Population and Development: Back to First Principles." First, "[There has been]...a tendency of many of those most concerned with the problems of rapid population growth to exaggerate its significance." In other words, the antinatalist case has been overstated; the present resurgence of interest represents a backlash. Second, some of the most important arguments

ers, Brazil

Garment worker, Kenya

and evidence that formed the basis of the antinatalist positions must be qualified. Two other recent reports complement King's study: one, entitled "Consequences of Rapid Population Growth: An Overview and Assessment," is by Geoffrey McNicoll, a research scholar at the Population Council in New York; a second, the *World Development Report 1984 (WDR 1984)*, is by the World Bank.

Taken together, these three recent studies provide a status report and a basis for a new "revisionist" interpretation of the role of population in development. Each study concludes that the net impact of rapid population growth is detrimental to economic development. However, the intensity of this conclusion and the reasons for it vary from the traditional antinatalist approach. A revisionist position composed of four main arguments may be emerging: (1) the negative impact of population growth is not nearly as great as the alarmist statements of the past claimed;[5] (2) population growth is not the primary direct cause of the major constraints to Third World development; (3) some of the previous antinatalist arguments have not proven empirically sound; and (4) an analysis of the economic impact of rapid population growth should not ignore its previously de-emphasized *indirect* effects such as the effect of rapid growth on a country's adoption of new technology or its ability to educate its citizens.[6]

In this paper, I will briefly evaluate the two most important antinatalist arguments that have dominated the population debate over the last 25 years, drawing heavily on the three studies cited above. Next, I will assess the extent to which these arguments have successfully included the indirect effects of population growth on an economy in order to determine the *net* impact of population. Finally, I will discuss an emerging revisionist interpretation of the role of population in development.

King's paper focuses on selected pronatalist arguments; to provide balance, I will address aspects of the antinatalist position. This is not intended to reflect a pro- or anti-population stance. My position, long held, is that on scientific grounds, and focusing primarily on economic impact, neither the arguments nor the various models used by the antinatalists sufficiently support the *strength* of the *general* conclusion that population growth exerts a strong adverse impact on the economy. Indeed, I will support my position by citing recent antinatalist writings! I eschew the "extremism" and "alarmism" common in the population debate. This alarmism has been, and continues to be, counterproductive to the analysis and the formulation of Third World development policies. A revisionist interpretation of the impact of rapid population growth is required that places population not as the lead character, but as an accomplice in a complex plot.

The First Antinatalist Argument: Land and Resource Scarcity

Proposition I: *Mitigating forces will not offset the increasing scarcity of, and diminishing returns to land caused by rapid population growth. As a result, food production will not keep pace with population growth and development will be seriously constrained.*

This is largely an empirical issue. Recent studies suggest:

1) The world is able to produce sufficient food for future generations well into the 21st century.[7]
2) Most Third World countries will be able to meet their own minimum food needs in the year 2000 assuming moderate uses of technology, although some (especially in sub-Saharan Africa) will not be able to meet their needs and will require outside assistance.[8]
3) The availability of potentially arable land will not seriously constrain future agricultural expansion, although the costs of reclaiming land are rising.[9]
4) Possibilities for improving agricultural productivity, the main source of expanding future yields, are substantial.[10]
5) The greatest constraints on agricultural expansion are (a) lack of incentives to expand production caused in part by government policy, (b) the lack of mechanisms for generating investment resources (e.g., rural credit) to use existing and new technologies, and (c) poor management of land and water resources.[11]

The "agricultural problem" of insufficient food production to meet the country or world minimum needs does not appear to be primarily a population problem. If population growth were slower, food imbalances would emerge later, but these imbalances would not be eliminated. Population growth probably is not the villain in the food balance story, but it is an accomplice. For example, if population growth increases income inequality, and if income constitutes the main means for obtaining food, then indirectly population growth can aggravate the food-population balance for an individual or family. However, this income-distribution effect can be offset completely or in part by government policy.

One should not be complacent about the seriousness of the food shortages. Famine still threatens many Third World countries. Yet in the future, as in the past, famines will be largely the result of inadequate *distribution* of food (e.g., inadequate income to purchase food) rather than the result of insufficient production and/or availability.[12]

Nor should one ignore the potential for increased agricultural production or the consequences of many government policies that deter production. Policies that turn the terms of trade against farmers in order to stimulate industrialization and keep food prices low for urban dwellers are common in Third World economies. For example, agriculture is often heavily taxed, agricultural investment (rural credit or extension services) is given relatively low priority, and overvalued exchange rates encourage capital-intensive production methods requiring relatively few workers. The *WDR 1983* highlighted the role government policy plays in slowing the growth rates in the gross domestic product (GDP) of 31 developing countries. Not only did the World Bank find that greater price distortions brought slower growth rates, it stated that "...the price distortions can explain about one-third of the variation in growth performance [in GDP among developing countries]."[13] The time has come to abandon the view of population growth as *the* villain in the food-balance problem, and to direct more attention to the root causes so well documented in an expanding literature.[14] Blaming population growth for the "food problem" can divert attention from those policies that will bring about a long-run solution to the fundamental constraints on agricultural development.

Proposition II. *Rapid depletion of natural resources caused by rapid population growth will substantially limit economic development.*

This argument is untenable for several reasons. First, evidence indicates that natural resource use is related more to rising per capita income than to population size per se.[15] Ironically, if population growth deters the growth of per capita income, then a slowing of population growth could increase the rate of resource depletion. Of course, multiplying income per capita by larger population sizes magnifies the demand for resources.

Second, evidence indicates that rising natural resource prices (due to scarcity) spur a search for substitutes, stimulate investment in discovering new sources of the resource, and cause consumers and producers to practice conservation.[16] Third, estimates of static resource supplies, the primary basis of "resource pessimism," have typically been wrong.[17] Finally, the research required to assess the way natural resources combine with labor and capital, and the way technology changes in the short and long run in response to natural resource scarcity, is only beginning to yield clues about the relationship between natural resource depletion and population growth.[18]

Reviews of the impact of population growth on development place the above Malthusian and neo-Malthusian concerns in perspective.

King's assessment is that neo-Malthusian arguments are much less important than the food-population balance. He argues that "For the purpose of discussing population growth, therefore, Malthusian issues are best applied to the traditional question of food supplies." This is because the demand for other nonrenewable resources "...reflects the consequences of rising income and production per per-

Rice field, Burma

son, at least as much as an increase in the number of people." In the area of food, he stresses the importance of a country-specific food balance, with each country being able to feed its people. The evidence he presents on land densities as an indicator of the problem is not overly helpful. In particular, factors other than land density are much more important to explaining the inability of obtaining country-specific food balance. With respect to the food situation in the area of greatest concern (sub-Saharan Africa), King's statement merits emphasis: "Blaming this poor performance on growing population pressure is wrong; limited technology and weak incentives to producers are probably the major culprits."

The *WDR 1984* provides an analysis of the Malthusian issue that is roughly consistent with my assessment. The importance of natural resources is significantly down played. "The difficulties caused by rapid population growth are not primarily due to finite natural resources, at least not for the world as a whole."[19] The relevance of country-specific food balance, the depletion of wood fuels, and the desertification of land are stressed. The primary cause of natural resource scarcity is not population directly, but rapid population growth does aggravate the problem. The *WDR 1984* concludes: "Nor is population growth in and of itself the main cause of natural resource problems—air pollution, soil degradation, even food availability."[20] This is a revisionist perspective. Population growth serves to reveal *sooner* the symptoms of underlying problems, but many of the solutions are to be found in areas other than in altering the rate of population growth.

In Summary. Malthusian and neo-Malthusian concerns about population are de-emphasized in recent analyses of population. Population growth is viewed less as a cause and more as an agent that pushes more fundamental problems to the forefront. Empirical evidence in the areas of nonrenewable resource constraints is not sufficient to make any strong conclusion about the impact of rapid population growth in the long run. In the area of food, the problem is more one of unrealized potential for increasing agricultural output and unequal *distribution* of income, rather than of diminishing returns to land.

Father and daughter, Yemen

The Second Antinatalist Argument: Saving and Investment

Proposition I. *Rapid population growth leads to a high ratio of children to working adults. This diverts household income away from saving and toward consumption.*

This argument requires substantial qualification on theoretical grounds, and its predictions have not been generally established.

At the level of the individual household, characterizing children as consumers and not producers is excessively narrow. The issue is how the family "finances" the goods and services needed by children. It is implausible that all or even most of this financing will be from savings. Indeed, in very poor households such an option may not exist. Moreover, children may in part substitute for other forms of consumption, may contribute directly to household market and non-market income, may stimulate parents to work more (or less) and/or harder, may encourage the accumulation of certain types of assets (e.g., education), and may stimulate the amassing (or reduction) of estates.

Three decades of research since this age-dependency thesis first gained popularity have revealed that the impact of children on household saving is uncertain and weak.[21] According to the *WDR 1984*: "Recent empirical studies find only minor support for this view;"[22] and Timothy King states: "In the litany of antinatalist arguments, however, this one bears little weight...but most modern theories suggest that the proportion of children in the population is not very important."

I conclude that the antinatalist argument based on the age-dependency effect of rapid population growth on saving is not robust on theoretical or on empirical grounds. The irony of this conclusion is that the above proposition was frequently cited as a basis for U.S. population policy in the Third World. According to population specialist Phyllis Piotrow, the argument that "a reduced rate of population growth would always mean additional funds for capital investment because it would produce fewer dependents and smaller expenditures for consumption and social needs [known as the Coale-Hoover thesis after Princeton demographer Ansley Coale and economist Edgar Hoover]...eventually provided

the justification for birth control as part of U.S. foreign policy."[23]

Proposition II. *A rapidly growing population generates a strong demand for government expenditures in areas such as education and health, thereby diverting funds from relatively productive, growth-oriented public and private investments.*

This argument also requires theoretical qualification, and relevant evidence to substantiate it is generally lacking.

First, there is very little empirical evidence on the impact of demographic change on the total share of government spending in Third World countries. One recent study suggests that this is relatively insensitive to the youthful age of the population and is more sensitive to the location of the population (i.e., urban areas).[24]

Second, even if a rapidly growing population does indeed generate demands for youth-oriented expenditures, it is also true that a slowly growing population exerts demands for expenditures for the elderly. It is not clear which composition of spending is more "growth oriented."[25]

Finally, the impact of economic growth of investing in education *relative to* other uses of funds (e.g., bridges, military, factories) determines the *net* impact of growth of shifting expenditures toward education. Only if it is assumed (or demonstrated) that educational expenditures are relatively "unproductive" and that such expenditures are financed at the expense of investment (as distinct from consumption) can the antinatalist composition-of-investment argument be sustained.

Many studies, including the *WDR 1984*, have shown that the costs of educating a rapidly growing population can be substantial. This, however, avoids the relevant empirical test. Instead, studies are needed that demonstrate that such expenditures come at the expense of relatively more productive investment (public and/or private).[26] The research must be constructed in such a way as to reveal the trade-offs within and between government and private spending, and the relative productivity (effect on economic growth) of these trade-offs.[27]

Proposition III. *Population growth results in less capital per worker or "capital-shallowing" since there is nothing about population growth per se that stimulates per capita saving.*

Once again I would argue that this proposition needs qualifying. In particular, the theory of saving that shows rapid population growth giving rise to strong capital-shallowing effects is narrow. In fact, rapid population growth leads to a relative abundance of labor vis-a-vis capital and land. As a result, the returns to the owners of capital and land will likely increase. Since owners of capital and land are likely to be the larger savers, the distribution-of-income effect on saving (and resulting investment) caused by population growth may offset the forces of capital-shallowing. Moreover, even if less capital per worker diverts investment funds from physical to human capital (education and health), as economist Robert Cassen has argued: "The real question [is] that of whether such educated and healthy people make a greater contribution to the economy than would be achieved by using the capital to raise the output of a smaller population."[28]

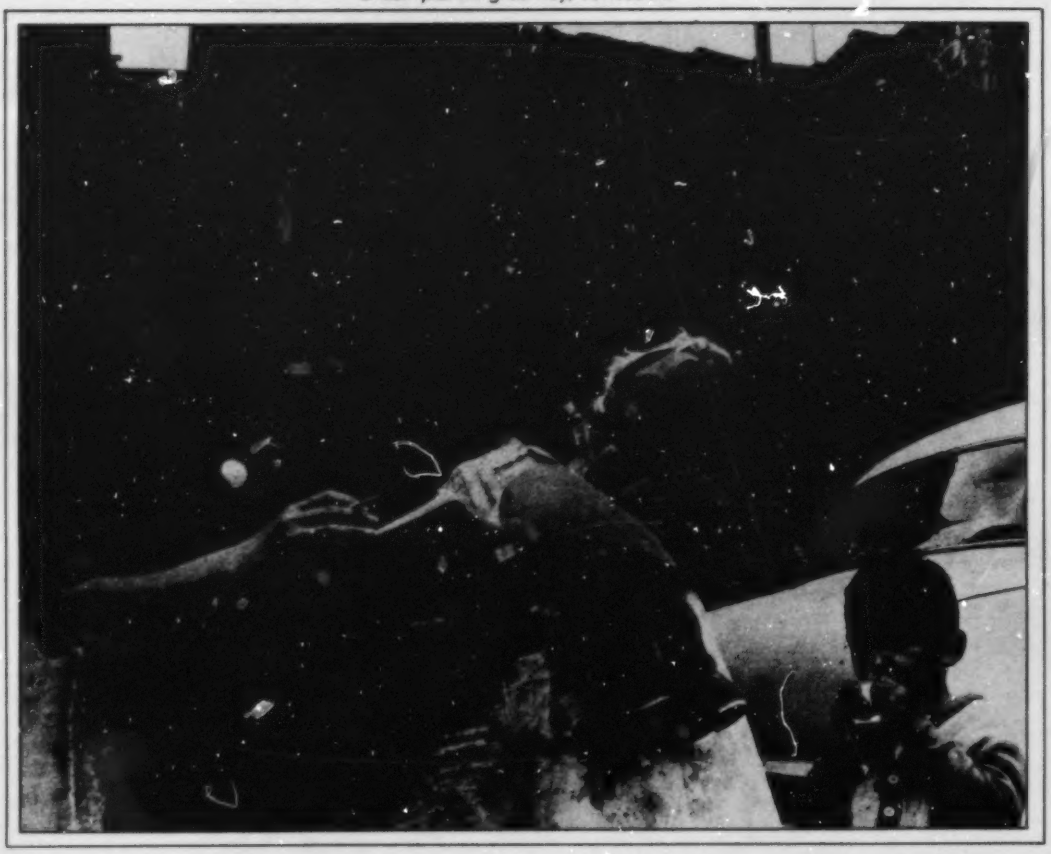
Evidence on the causes of household saving is scarce for Third World countries. There is, however, evidence that suggests that the impact of population growth on saving (skewing income toward the higher savers) can reduce the capital-shallowing effects highlighted in the literature.[29]

In Summary. The results of economic research have not provided convincing evidence to support the strength of the antinatalist concern about the adverse effect rapid population growth has on savings and investment. Authors of recent reviews of the literature de-emphasize this impact. Timothy King notes: "...the determinants of savings and investment are not well understood..." and Geoffrey McNicoll observes: "What then can be said about the net savings or investment impact of rapid population growth? The answer appears to be very little." He further argues that development theory is placing less weight on the role of physical capital as the key determinant of development. Such a reorientation is consistent with the *WDR 1984*, which says relatively little about the capital-shallowing or age-distributional effects of population on saving within an economy but a great deal about the impact of population on the level and composition of investments in *human* capital—education, and to a lesser extent, health.

Measuring the Net Impact of Population Growth

Assessing the overall economic impact of rapid population growth is not an easy task. Typically, it is done by studying the combined impact of the various direct effects of population growth, such as resource depletion and lack of savings. This method

Urban planning survey, Venezuela



produces tenuous results for two reasons. First, a convincing body of empirical evidence to properly weight the direct effects of population growth is still lacking. Second, and more important, population exerts not only *direct*, but also *indirect* effects; these indirect "feedbacks" can substantially alter an assessment of population growth's full role in economic development.

Moreover, focusing on the direct effects produces a biased view: the role of population growth is *overstated*. For example, consider the key antinatalist position. Here the emphasis is on the resource-using aspects of population growth—population growth lowers the ratio of people to resources (e.g., capital, land, minerals, water, etc.) and impedes development. But what about indirect effects that can augment or mitigate these direct effects? Indirect effects include a rise in the price of the scarce resources causing conservation of their use and expansion of their supply. An accurate appraisal of the net impact of population must take these indirect effects into account.

This can be accomplished by formulating economic models that incorporate the direct and indirect effects of population growth so as to reveal their net effect on the economy of a country, a region or the world. Several models have been constructed, but the best known are ill-equipped to assess the full net impact of population on development. Indeed, they ignore the indirect effects.

Consider the most popular models that have revealed population's detrimental impact on development: the country-specific TEMPO models that highlight the capital-shallowing effects of rapid population growth, and the *Limits to Growth* model that highlights constraints on natural resources. Neither of these models incorporates even minimally the indirect effects discussed above. Hence, they are more devices of persuasion than scientific tools to advance our knowledge on the interaction of population growth and the economy.[31] Is it possible, then, to draw supportable conclusions from these models? The answer is no.

Fortunately, another type of model promises to

Wheat conservation, India

represent more accurately the role of population in the economy. These are "computable general equilibrium" (CGE) models, which emphasize the indirect effects of population growth. Such models reflect the conservation and substitution that occur when a resource becomes scarce. While most CGE models have not focused on population growth or demographic change, those that have reveal that *rapid population growth has a much smaller impact on economic development when indirect effects are considered.*

The key results of CGE models on population growth reveal: (1) rapid population growth can slow the growth of per capita production, but this impact may be reduced if the rapid population growth also leads to a larger gap between the incomes of the rich and poor and increases the savings of the rich, thus reducing the capital-shallowing effect;[32] (2) rapid population growth can stimulate urbanization through rural to urban migration, but this displacement of farm labor may be offset by other influences such as rising urban costs;[33] (3) rapid population growth can produce unequal income distribution but feedbacks are set in motion to reduce this impact, and other factors play a larger role in skewing income distribution as economic development occurs.[34]

Appropriately, the King paper and the *WDR 1984* are largely silent on the results of the popular models including TEMPO and *Limits to Growth.* McNicoll does note that the new CGE models will be useful in revealing selected effects of population growth. However, he is skeptical about the use of economic models in general since they exclude non-economic factors such as social structures, administrative organizations, and political systems.

I conclude that the antinatalist case that is based in part on the several popular models is flawed, for such models are analytically and empirically ill-equipped. Nevertheless, CGE models promise to provide at least one useful assessment, but this approach is new and the models developed to date are more suggestive than conclusive. They illustrate the critical importance of the indirect effects of population growth. They also signal the direction in which future research can provide a more balanced and rigorous assessment of the role of population growth in the economy.

A Revisionist Interpretation

A revisionist interpretation of the role of population growth in economic development is emerging. In the past, antinatalists have stressed the direct and strongly negative impact of population growth on food availability, resource depletion, saving, government expenditures, and investment productivity. Theoretical and empirical research lead to a modified position. This is especially true if the indirect effects of population growth are taken into account and if it is recognized that several of the most basic causes of underdevelopment are factors other than population size and growth.

A revisionist interpretation thus (1) de-emphasizes some of the "traditional" hypothesized direct influences of population, and (2) assigns population the role of an accomplice in contrast to the leading role of villain (or hero) in the development story. To this list I would add the importance of (3) the *pace* of population growth, and (4) the political response to it.

The first and second elements of this revisionist interpretation constitute the thrust of this paper. They are supported by King who concludes that population "aggravates" poverty, but recognizes that other causes are much more important; and by the *WDR 1984*, which portrays population in the role of "exacerbating" more fundamental problems.

The third and fourth elements of a revisionist interpretation relate to the implications of the *pace of change* (the dynamics) of population in the develop-

ment process and government response to this change. That pace can be viewed as a largely independent influence, and it has direct consequences that are seldom highlighted but no less important. Rapid, as distinct from moderate or slow population growth, (1) advances the time in which problems are encountered, and (2) shortens the time available to resolve problems. The question is whether this rapid pace contributes to, or deters, development. This is mainly a question of political economy. Two problems commonly attributed to population growth will serve to illustrate some of the relevant considerations here.

The first problem is that of food imbalance, which was discussed earlier. For many countries a main cause of this food shortage is government policy that penalizes agriculture through imposing taxes and subsidies that twist the terms of trade against farmers, thereby reducing incentives to produce and innovate. One impact of rapid population growth is to bring this problem to a head sooner. It also forces a more rapid response. The critical question is whether such "time pressure" is more or less likely to bring about changes that will address the *causes* of the problem (e.g., often ill-advised government policies), or the manifestations of problems (e.g., malnutrition or starvation). Some would argue that the causes of problems are more likely to be addressed in "crisis settings;" others would argue that the short-run perspectives of government leaders are reinforced in dealing with seemingly short-run problems (e.g., famine), and long-run solutions are more likely to be bypassed.

A second problem relates to high rates of unemployed or underemployed people in Third World cities. Again, one important cause of this problem is government policies that encourage using capital-intensive technology requiring relatively fewer workers amidst a labor surplus. Rapid population growth reveals the problem sooner, and given its magnitude, encourages a decisive and rapid response. And again, the question is whether the pressure of time results in a resolution of the fundamental causes (e.g., realigning exchange rates and reducing penalties toward agricultural production) or just a treatment of the symptoms (e.g., employing workers in relatively unproductive public sector jobs). The *WDR 1984* offers examples of the latter type of political response.[36] What is not clear, however, is whether more moderate rates of population growth would have led to more enlightened public policies.

The population debate is entering a new phase. Population growth is not viewed as a villain but rather as an accomplice, and a broader interpretation of its interaction with development issues such

Market, Ecuador

as food production and unemployment, and even government policy formulation, is being examined. Thus, unemployment is seen as the result of other factors besides population growth. According to the *WDR 1984*:

> The adoption of trade and exchange rate policies that do not penalize labor and the dismantling of institutional barriers to creating jobs would ease the employment problem.[38]

And the food-balance problems are being seen as the results of other factors besides population growth. According to the *WDR 1984*:

> Pricing policies in agriculture and more resources allocated to rural credit, agricultural research and extension, and so forth, would increase agricultural output.[37]

Such a revisionist perspective on the role of population is revealed by comparing the alarmist assessment of former World Bank President Robert S. McNamara (quoted earlier), who compared population growth with the threat of nuclear war, with the moderate appraisal of his successor, A.W. Clausen, who emphasizes the more fundamental causes of poverty. Referring to the poorest of the Third World countries, and noting that slowing population growth can make a difference, he concludes:

> The poverty of those areas cannot be blamed on rapid population growth alone; the causes of poverty go well beyond population change. Nor will reducing population growth alone ensure their economic transformation.[39]

We must take seriously what we have learned in recent decades about the underlying causes of underdevelopment, and place population growth in a balanced perspective whereby the causes, and not the symptoms, of poverty are addressed.

Farmer, Gambia

Footnotes

1. Kuznets, Simon, "Population Change and Aggregate Output," *Demographic and Economic Change in Developed Countries* (Princeton: Princeton University Press, 1960).
2. For an excellent summary of the evolution of American population policy, see Piotrow, P.T., *World Population Crisis: The United States Response* (New York: Praeger Publishers, 1973).
3. McNamara, Robert S., *One Hundred Countries, Two Billion People: The Dimensions of Development* (London: Pall Mall Press, 1973) pp. 31, 45-46.
4. These programs can also be justified on substantial grounds other than those of simply promoting development. See World Bank, *World Development Report 1984* (New York: Oxford University Press, 1984) chs. 6-7.
5. Curiously, the World Bank, *WDR 1984*, p. 79, cites a figure of 2 percent beyond which the net impact of population on development turns significantly negative—i.e., "acts as a brake on development." While this 2 percent figure is viewed as an approximation varying from country to country, it is notable that 1) the figure is so high, and 2) a non-linearity is entertained (i.e., at lower rates, population may not act as a significant brake on development, but can be accommodated).
6. The most interesting redirection of attention is in the *WDR 1984* which stresses the impact of population growth on the development of human capital (especially education) and the impact of technical change—"...there is little doubt that the key to economic growth is the advance of human knowledge." The report speculated that population growth "... slows the accumulation of skills that encourage technological change." These are interesting hypotheses that merit close empirical assessment. Moreover, they represent a shift of attention from the traditional neoclassical concerns about saving and physical capital formation to technology and education. This is a welcome development since so little is known about the nature and determinants of technical change. See the World Bank, *WDR 1984*, p. 80.

7. See World Bank, *WDR 1984*, p. 91; Cassen, Robert, "Population and Development: A Survey," *World Development* Vol. 4 (1976) pp. 785-830; and Resources for the Future, "Feeding a Hungry World," *Resources* Vol. 76 (1984) pp. 1-20.
8. Food and Agriculture Organization of the U.N., *Land Resources for Populations of the Future* (Rome: FAO, 1980); and the World Bank, *WDR 1984*, p. 90.
9. World Bank, *WDR 1984*, p. 90.
10. World Bank, *WDR*, 1981, p. 105; World Bank, *WDR 1982*, pp. 46-52; World Bank, *WDR 1984*, pp. 91-94; Cassen, "Population and Development," p. 908; and Resources for the Future, "Feeding a Hungry World."
11. *Ibid.*
12. For a penetrating analysis of food-balance and "entitlements," consult Sen, Amartya, *Poverty and Famines: An Essay on Entitlement and Deprivation* (Oxford: Clarendon Press, 1981); also see Cassen, "Population and Development," pp. 809-810.
13. World Bank, *WDR 1984*, p. 63.
14. For a similar reassessment of the Malthusian assessment see Johnston, Bruce F. and Peter Kilby, *Agriculture and Structural Transformation* (New York: Oxford, 1975).
15. Keyfitz, Nathan, "World Resources and the World Middle Class," *Scientific American* Vol. 235 (1976) pp. 28-35.
16. On the role of markets in signaling conservation, V. Kerry Smith and John V. Krutilla conclude: "...private markets (with complete information) are not likely to lead to excessively rapid depletion of natural resources," and "...departures from either competitive markets or noncompetitive market structures that would lead to efficient intertemporal resource-use profiles are likely to favor excess conservation rather than too-rapid depletion." See Smith, V. Kerry and John V. Krutilla, "Economic Growth, Resource Availability, and Environmental Quality," *American Economic Review* Vol. 74 (1984) pp. 226-230. On the possibilities of conservation, the World Bank, *WDR 1984*, concludes: "Progress made so far in conservation has only scratched the surface of what is technologically possible and likely to be economically attractive at higher energy prices." See the World Bank, *WDR 1984*, p. 28. Reviews of projections of nonfuel resources appear to reveal substantial supplies relative to demands well into the next century. See the World Resources Institute "World Resource Projections: A Review of Current Projections of World Resources," *The Global Possible: Resources, Development and the New Century* (Washington, D.C.: World Resources Institute, 1984). For a pessimistic assessment about resources in relation to population, see Council on Environmental Quality, U.S. Department of State, *The Global 2000 Report to the President of the U.S., Entering the 21st Century* (Washington, D.C.: U.S. Government Printing Office, 1981). For an optimistic assessment, see Simon, Julian, and Herman Kahn, *The Resourceful Earth: A Response to Global 2000* (New York: Basil Blackwell, 1984).
17. Simon, Julian, *The Ultimate Resource* (Princeton: Princeton University Press, 1981).
18. World Bank, *WDR 1984*, p. 80.
19. *Ibid.*
20. Since energy is taken by many to be the most important natural resource, the key issue is how energy is combined with capital and labor in production. This is an empirical issue about which there presently exists great uncertainty. If energy and capital are complements, then rising energy prices could diminish capital formation and growth. A preliminary consensus in the literature shows that energy and capital are complements in the short run, and substitutes in the long run. See Griffin, James F., "The Energy-Capital Complementary Controversy: A Progress Report on Reconciliation Attempts," in E. Berndt and B.C. Field (eds.), *Modeling and Measuring Natural Resource Substitution* (Cambridge, Mass.: MIT Press, 1981); and Smith and Krutilla, "Economic Growth."
21. See Mason, Andrew, "National Saving Rates and Population Growth: A New Model and New Evidence," unpublished paper, the East-West Population Institute, Honolulu, Hawaii, 1984. In a review of a sizable number of studies, Mason concludes that "...there is very little reliable evidence on the relationship between the number of children and household savings based on the analysis of household survey data for developing countries" (p. 6). From a model he developed, Mason concludes that the impact of a population with a disproportionate number of children is likely to be felt only in rather robust, fast-growing economies. This excludes much of South Asia and sub-Saharan Africa, and is most applicable to parts of the Middle East, Asia and the Pacific. Ironically, the benefits (increase in savings) of low population growth are *least* in countries with sluggish economies. See also, Bilsborrow, Richard E., "Age Distribution and Savings Rates in Less Developed Countries," *Economic Development and Cultural Change* Vol. 28 (1979) pp. 23-44; Cassen, Robert, *India: Population, Economy and Society* (New York: Holmes and Meier, 1978); and Kelley, A.C., "Population Growth, the Dependency Rate, and the Pace of Economic Development," *Population Studies* Vol. 27 (1973) pp. 406-420; and Kelley, A.C., "Interactions of Economic and Demographic Household Behavior," in Richard A. Easterlin (ed.) *Population and Economic Change in Less Developed Countries* (Chicago: University of Chicago Press, 1980).
22. World Bank, *WDR 1984*, p. 82. Several reasons are presented, including 1) the extent to which household savings is constrained by poorly developed financial markets, 2) the premise that children may be a form of savings, and 3) the fact that many poor families are too poor to save.
23. Piotrow, *World Population Crisis*, p. 15.
24. Kelley, A.C., "Economic Change and the Size of the Government Sector" *Southern Economic Journal* Vol. 43 No. 2 (1976) pp. 1056-1066.
25. Kelley, "Economic Change and the Size of the Government Sector"; Kelley, A.C., "The Role of Population in Models of Economic Growth" *American Economic Review* Vol. 64 (1974) pp. 39-44; and Kelley, A.C., "Demographic Impacts on Demand Patterns in the Low-Income Setting" *Economic Development and Cultural Change* Vol. 30 (1981) pp. 1-16.

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26. Cassen argues that focusing on the direct impact of population growth on investment (e.g., "unproductive" education versus "productive" factories) has probably missed the most relevant impact of population on investment. In the context of Indian experience, he highlights the increased capital and foreign exchange costs required to maintain or increase agricultural productivity in the face of population pressures. See Cassen, *India*, pp. 226-236. I would note that computable general equilibrium modeling (see next section) can be used to assess the impact of the *indirect effects* of population growth on investment.
27. The data presented are often not directly relevant, or are circumstantial. For example, calculations are made of the cost of accommodating larger school enrollments engendered by high fertility rates. Next a "counterfactual" is posed of lower fertility rates, showing "educational savings." Speculations are then offered on how such savings "could have been" used in various productive ways. The relevant issue is whether such savings "would have been" used in productive ways. The *WDR 1984* provides examples of this counterfactual analysis. For Egypt, "less rapidly growing enrollment produces considerable saving; these *can be used* to improve school quality" and "with the money saved by lower fertility, the Malawi government *could afford* to enroll..." (Emphasis mine.) See World Bank, *WDR 1984*, p. 85. Of course, the savings could also be used for other things, many of which are "unproductive." The relevant data would instead demonstrate how a group of countries do in fact reallocate the resources, public and/or private, in response to higher population growth rates.
28. Cassen, *India*, pp. 225-226.
29. Kelley, A.C., and J.G. Williamson, *Lessons from Japanese Development: An Analytical Economic History* (Chicago: University of Chicago Press, 1974).
30. McNicoll, G., "Consequences of Rapid Population Growth: Overview and Assessment," *Population and Development Review* Vol. 10 (1984) pp. 177-240.
31. With respect to the TEMPO models, B. Arthur and G. McNicoll note that "one assumption, questionable in theory, therefore governs the outcome; the result has been settled in advance, and built in" and the "...models were for the most part persuasion devices for fertility reduction." See Arthur, B. and G. McNicoll, "Large-scale Simulation Models in Population and Development: What Use to Planners?" *Population and Development Review*, Vol. 1 (1979) pp. 151-165. Warren Sanderson agrees: "...in the TEMPO II model, expenditures on fertility control could increase per capita income even if the cost of averting an additional birth were about five or six times per capita income. This result is essentially built in...by assuming that population growth has no stimulating effects anywhere in the economy." See Sanderson, Warren C., *Economic-Demographic Simulation Models: A Review of their Usefulness for Policy Analysis* (Laxenburg, Austria: International Institute for Applied Systems Analysis, 1980) p. 12. Robert Solow echoes the need for feedback in his assessment of the *Limits to Growth* study: "The basic assumptions [are] that stocks of things like the world's natural resources and the waste disposal capacity of the environment are finite, that the world economy tends to consume the stock at an increasing rate, and that there are no built-in mechanisms...to turn off consumption gradually and in advance. You hardly need a giant computer to tell you that a system with these behavior rules is going to bounce off its ceiling and collapse to a low level." See Solow, Robert, "Is the End at Hand" *Challenge* Vol. 16 (March/April 1973) p. 43. And W. Sanderson faults the BACHUA models for insufficient economic feedback and interaction: "...most of the simulations...assume that output growth and investment are unrelated to one another and unrelated to anything else in the model." See Sanderson, "Economic-Demographic Simulation Models," p.22.
32. Kelley, A.C., J.G. William and R.J. Cheetham, *Dualistic Economic Development: History and Theory* (Chicago: University of Chicago Press: 1972).
33. Kelley, A.C., and J.G. Williamson, *What Drives Third World City Growth? A Dynamic General Equilibrium Approach* (Princeton: University Press, 1984); and Cassen, *India*, pp. 226-236. The Kelley and Williamson model responds in part to Cassen's criticisms of economic-demographic paradigms that fail to examine the impact of population growth on investment used to produce consumer goods, the cost of overcoming diminishing returns to land, and the role of foreign investment.
34. Adelman, I. and S. Robinson, *Income Distribution Policy in Developing Countries: A Case Study of Korea* (Stanford, Calif.: Stanford University Press, 1978).
35. World Bank, *WDR 1984*, p.90.
36. World Bank, *WDR 1984*, p.105.
37. *Ibid.*
38. World Bank, *WDR 1984*, p.iii.

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